Post-it™ Fax Note 7671	Date 8/4/97	# of pages ▶ 6
To Dorthea Hoyt	From Ken Baier	
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INTEROFFICE
MEMORANDUM

DATE: August 19, 1997

TO: Doug Steffen, E/C/D Project Management, Bldg. T130F, X2164

FROM: D. R. Swanson, Team Lead, Authorization Basis, Bldg. 130, X7009

SUBJECT: AUDITABLE SAFETY ANALYSIS REVIEW FOR THE BUILDING 123 DECONTAMINATION AND DECOMMISSIONING (D&D) PROJECT - DRS-058-97

This memorandum has been prepared in response to your request for an authorization basis review of the Building 123 Decontamination and Decommissioning (D&D) Project. Review of the project was based on information provided which included: (1) *Proposed Action Memorandum for the Decommissioning of Building 123*, RF/RMRS-97-012, Revision 2, July 17, 1997 (waiting DOE approval); (2) *Reconnaissance Level Characterization Report for Building 123*, RF/RMRS-97-021, June 1997; and (3) *Building 123 Decommissioning Project Health and Safety Plan*, RF/RMRS-97-022, Revision 0, June 1997. In addition, the *Building 123 Radiological Health/Analytical Laboratories Facility Safety Analysis (FSA)*, Revision 0, April 1997, was reviewed. The FSA is included in the Site Safety Analysis Report (Site SAR) as the authorization basis for Building 123 and is at DOE awaiting final approval.

The scope of this review covers those activities occurring after personnel relocation from the facility, the removal of any process or bulk chemicals in the facility or in the cargo containers, and the removal of any low level waste generated during the relocation activities. These activities were all in progress prior to the authorization basis review being requested. It is presumed that controls specified in the HASP and Site procedures were adhered to during accomplishment of these activities.

Facility Classification Criteria

DOE-EM-STD-5502-94, *Hazard Baseline Documentation*, establishes uniform Office of Environmental Management (EM) guidance on hazard baseline documents that identify and control radiological and non-radiological hazards for all EM facilities. The standard provides a "road map" to the safety and health hazard identification and control requirements contained in DOE Orders and provides EM guidance on the applicability and integration of these requirements. The standard includes: (1) the definition of four classes of facilities (nuclear,

non-nuclear, radiological, and other industrial facilities; (2) the thresholds for facility hazard classification; and (3) the applicable safety and health identification, controls and documentation. The thresholds for facility hazard classification are:

- Nuclear Facility Hazard Category 3 thresholds per DOE Order 5480.23, *Nuclear Safety Analysis Reports* and DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*,
- Reportable Quantities (RQs) per 40 CFR 302, *Designation, Reportable Quantities, and Notification.*
- Threshold Quantities (TQs) per 29 CFR 1910.119, *Process Safety Management* (PSM) and 40 CFR 68, *Risk Management Programs (RMP) for Chemical Accidental Release Prevention*,
- Threshold Planning Quantities (TPQs) per 40 CFR 355, *Emergency Planning and Notification*, and

DOE Order 5480.23 is the primary Order governing safety analysis requirements for nuclear facilities. Facilities are designated as "Nuclear Facilities" if the radiological inventory exceeds the threshold values in DOE-STD-1027-92. DOE-STD-1027-92 identifies the threshold between a Category 3 Nuclear Facility and a below Category 3 Nuclear Facility as a comparison of the total segmented inventory with the values in the standard.

The RQs in 40 CFR 302, Table 302.4, *List of Hazardous Substances and Reportable Quantities*, and Appendix B, *Radionuclides*, are used to establish the dividing line between radiological or non-nuclear facilities and industrial facilities. The levels in 40 CFR 302 are based on the RQs in pounds of material for hazardous substances and curies of materials for radioactive substances. RQs are based on the potential release of materials into the environment.

The basis for the application of the PSM Standard, 29 CFR 1910.119, and the RMP Rule, 40 CFR 68, is the inventory quantity of hazardous substances determined by gross amounts (unadjusted by process) of hazardous materials. The PSM Standard was promulgated to prevent and mitigate the effects of major accidents at chemical facilities that could result in loss of life to workers. The RMP Rule was promulgated to prevent and mitigate the effects of accidental releases of hazardous materials that could affect public health and/or the environment. Exceeding TQ levels specified in 29 CFR 1910.119 or 40 CFR 68 triggers PSM and RMP respectively and classifies the facility as either *radiological* or *non-nuclear.*

The TPQ levels in 40 CFR 355 are used to determine whether or not emergency planning and release notification are required based on an airborne release of any listed chemical. Exceeding TPQs in 40 CFR 355 triggers compliance with emergency planning and release notification requirements and classifies the facility as either *radiological* or *non-nuclear.*

If none of the above mentioned thresholds are exceeded based on chemical and radiological inventories, an *industrial* facility classification can be assigned.

Building 123 Classification

Based upon a review of the above information, there are no areas within Building 123 with radioactive contamination levels exceeding 40 CFR 302.4, Appendix B RQ levels. The following were identified as potential radiological contamination sources:

- Fixed contamination has been found in the building, specifically Rooms 105, 109, 126B and 157. Actions specified in Figure 4-1 of the Building 123 Health And Safety Plan (HASP) provide the necessary controls. These controls include: (1) ensuring all workers are properly trained, medical requirements are established, personal protective equipment (PPE) is defined, and radiation prerequisites are met prior to beginning the activity; (2) developing and implementing an Activity Hazard Analysis (AHA) for the activity; (3) performing air and smear monitoring sampling; and (4) having available and following the Radiation Work Permit.
- Various isotopes of plutonium, americium, uranium, and curium were transferred as process waste from Building 123. The process waste system has been designated, per the Comprehensive Environmental Response and Liability Act (CERCLA) as Individual Hazardous Substance Site (IHSS) 121. IHSS 121 consists of Resource Conservation and Recovery Act (RCRA) Unit 40 underground process waste lines which transferred the process waste. One of the process waste lines has been identified as an area of reported release. Another IHSS, IHSS 148, is located beneath Building 123 and was established as a result of reported small spills of nitrate-bearing wastes along the east side of the building. These spills may also be the result of leaks in the process waste line. A complete characterization of the IHSS's has not been completed. Prior to removing the Building 123 slab, a radiological survey of the area will be performed.

The FSA classification of Building 123 was *Non-nuclear, Moderate* since RQ and TPQ levels were exceeded due to chemicals used and stored in the facility. The FSA identified hydrochloric acid, hydrofluoric acid, and nitric acid as chemicals of concern in Building 123. The hydrofluoric acid and nitric acid levels exceeded 40 CFR 302.4, Table 302.4 RQ and 40 CFR 355 TPQ levels. The hydrofluoric acid and nitric acid were contained in 0.5-liter plastic bottles and 1-gallon glass bottles respectively and were stored in outside storage units (cargo containers). The hydrochloric acid exceeded the Emergency Preparedness Screening Threshold (EPST) level, was contained in 1-gallon glass bottles, and was stored outside in the cargo containers and inside in Room 103. These chemicals have been removed from the building and the cargo containers to quantities below TPQ, RQ and EPST levels. Other chemicals removed from the facility include oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate.

Other hazardous materials identified in the building are asbestos containing material, crystallized perchloric acid in hoods, beryllium, polychlorinated biphenyls (PCBs), RCRA hazardous waste in Satellite Accumulation Areas (SAAs), and pressurized gas cylinders/liquid nitrogen. The presence of these hazardous materials is considered a standard industrial hazard. Actions have been identified for each of the hazardous materials as follows:

- Asbestos abatement will occur after personnel are relocated from the facility and prior to beginning decommissioning of the building. An Integrated Work Control Plan (IWCP) will be developed to specify the activities required and the HASP identifies the necessary controls.
- Special precautions have been identified for the removal of potential crystallized perchloric acid in the perchloric acid hoods. The HASP specifies controls for this hazard.
- Two of the 39 areas sampled indicated beryllium contamination. The levels of beryllium present in the samples is below the RFETS site housekeeping level of 25 $\mu g/ft^2$ as specified in 1-15310-HSP-13.04.
- Light ballasts have the potential for containing PCBs. The light ballasts will be further evaluated prior to decommissioning to see if they contain regulated amounts of PCBs. Should the ballasts contain regulated amounts of PCBs the decommissioning contractor will remove the ballasts from the building and RMRS Waste Management will package and ship the ballasts.
- RCRA hazardous waste was generated by operations in the rooms in which it is stored. The RCRA hazardous waste in the SAAs will be characterized by process knowledge, packaged, labeled, and shipped for storage or disposal prior to closing the accumulation areas.
- The pressurized gas cylinders used by the laboratories are being transported to where the laboratory personnel are relocated. The liquid nitrogen system will be disconnected and removed as part of the D&D effort.

Based upon the information received and reviewed, the activities associated with the Building 123 D&D are below thresholds associated with categorizing a facility as anything other than an *Industrial Facility* per DOE-EM-STD-5502-94, *Hazard Baseline Documentation*. This determination is based on the small quantities of hazardous materials, both radiological and chemical, anticipated to be handled during D&D activities. The D&D activities for Building 123 present minor onsite and negligible offsite impacts to people and the environment per DOE-EM-STD-5502-94 criteria. However, the suspected radiological and chemical material amounts associated with this project do present safety risk to immediate workers who will be performing the work.

The safety documentation required for an *Industrial Facility*, per DOE-EM-STD-5502-94, includes a site-specific HASP since hazardous materials are present. The HASP obviates the need for the FSA currently in affect for the facility.

Recognized Project Controls

The Building 123 Decommissioning Project HASP addresses control of radiological and chemical hazards to workers from suspect contaminants and compliance with applicable OSHA standards. Important safety controls documented in the HASP are those relating to monitoring for suspect contaminants and the use of appropriate PPE. The monitoring program for hydrocarbons and radionuclides performed during project activities includes action levels much less than those that would indicate the presence of hazardous materials in quantities exceeding the thresholds associated with non-nuclear (for chemical hazards), radiological, and nuclear facilities. Therefore, by not exceeding the prescribed action levels in the HASP the potential health and safety impacts to the public, collocated worker, and the environment are negligible.

An assessment by the RMRS Authorization Basis organization will be required if contamination or hazardous substances are discovered in the facility during D&D activities whereby the RQ values specified in 40 CFR 302, Table 302.4 or Appendix B are exceeded. In addition, no hazardous substances may be brought onto the site during D&D activities exceeding the RQ values specified in 40 CFR 302, Table 302.4.

Conclusion

This analysis is based upon conditions identified in the referenced documents. If an unanticipated hazard or condition develops, and an evaluation determines the operational controls are not sufficient to adequately address the new circumstances, a new authorization basis may be required. The RMRS Authorization Basis Team Lead should be contacted if this situation occurs.

Please direct any questions or concerns regarding this memorandum to myself or Ken Baier at X2852.

DRS/kbb

cc:

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ASSESSMENT DOCUMENT R[illegible]W FORM

HAZARD BASELINE DOCUMENT REVIEW FOR [illegible]

DR3-058-97

Assessment ID Number: 97 [illegible] **Date:** 10/14

ASSESSOR: S. WALKER-LEMBKE

NOTES: Basis for hazard classification is the assumption that contamination in B123 is below 40 CFR 302.4 thresholds of 0.01 Ci or 0.16 g Pu. The continuing validity of the assumption is necessary for the activity to remain industrial. The control credited is the monitoring and action levels specified in the HASP.

The B123 D&D HASP does not have specific monitoring requirements or action levels for the activities.

The hazard classification and controls need to be reevaluated as necessary to match the project documents [illegible] planned execution of activities.

Assessor Signature: Shannon Walker-Lembke **Date:**

Follow Up Activities:

Post-it® Fax Note 7671	Date	# of pages ▶ 1
To Don Swanson	From Shannon	
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DPPR

~~MAJOR FIELD ACTIVITY READINESS~~

FUSRAP PP: ~~1~~ 2
ATTACHMENT: ~~1~~ 1
REV: ~~1~~
PAGE: 1 of 1

~~MAJOR FIELD ACTIVITY~~ INITIATION
~~READINESS~~ REVIEW BOARD RESULTS
(~~RI/FD~~ ACTIVITY)

The results of the ~~Readiness~~ Review Board ~~(RRB)~~ for the initiation of the following major activity at the _____ site are listed below. Signature of the Chairperson indicates that all ~~RRB~~ members have signed off before him.

Major activity: _____

	A	CA	D
RECOMMENDED			
	A	CA	D

Chairperson:
_____ Date _____

~~Deputy~~ Program Manager
_____ Date _____

~~RRB~~ Technical Director
_____ Date _____

Environmental, Health and Safety Manager
_____ Date _____

Quality Assurance Manager
_____ Date _____

Board Member
_____ Date _____

Board Member
_____ Date _____

Board Member
_____ Date _____

A - Approve
CA - Approve Pending Resolution of Action Items
D - Disapprove

FI_0140